Lesson 3: Ideating
by Richard Hoonakker

Grade Level(s)

Biology 9-10

Lesson Overview

In this lesson, new student groups will be created so that there is a representative from each of the invested individuals (City, Resident, and Environmental Conservationist). Students will brainstorm ideas for a solution while considering the information on their empathy map and POV statement.

Learning Objectives

- Students will develop their ability to work in teams,
- Students will develop their ability to generate new ideas and think from a multiple perspectives.

Standards

Utah Biology Standards

Students will understand that living organisms interact with one another and their environment.
Objective 1:   Summarize how energy flows through an ecosystem.
Objective 3:   Describe how interactions among organisms and their environment help shape ecosystems. (Standard 1)

Next Generation Science Standards

Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. (MS-LS2-1)

Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. (MS-LS2-2)

Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. (MS-LS2-4)

Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (MS-LS2-5)

Common Core Standards

Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. (CCSS.ELA-Literacy.WHST.9-10.1.c)

Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. (CCSS.ELA-Literacy.WHST.9-10.8)

Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. (CCSS.ELA-Literacy.SL.9-10.1)

Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence. (CCSS.ELA-Literacy.SL.9-10.3)

Preparation

Be sure that all students/groups have their POV Statements from Lesson 2. Prepare the room for group work.

Materials and Resources

- Large Poster Paper
- Sticky Notes

Activity 1: Revisiting the POV Statement (*15 minutes*)

- Have each Empathy Group meet to discuss and review the POV statement they created for their user. Have students consider making revisions to the POV statement if needed.
- Assign students into new groups of three so that each group has a member representing each user. We will call these groups the "Design Groups."

Activity 2: Ideate (*30 Minutes*)

- Students will work as a group to brainstorm a list of items that should be included in the open space. Students should be encouraged to think outside the box and to not omit any idea for any reason.

- This process can be completed using the large poster paper or sticky notes.

Activity 3: Matching Ideas with Needs (*45 Minutes*)

- Students will begin to make connections between the ideas and the needs of their users, editing ideas to consider as many users as possible, and consider eliminating ideas that are not considerate to multiple users.

Troubleshooting

Students may run out of steam after the first few minutes of brainstorming. The teacher will want to propose various viewpoints to consider helping students open their minds to new possibilities.

Assessment

Students will produce a chart with the ideas generated during the brainstorming process. On the chart, students will have identified ideas that specifically meet the needs of their users.